Amendments to the Specification:

Before the paragraph beginning on page 1, line 3, please insert the following header,

B2 -Technical Field-.

Before the paragraph beginning on page 1, line 7, please insert the following header,

B3 -Background of the Invention-.

Before the paragraph beginning on page 2, line 7, please insert the following header,

B4 -Summary of the Invention-.

Please replace the paragraph beginning on page 3, line 33, with the following amended paragraph:

B5 The robot preferably comprises a plurality of navigation sensors providing signals for enabling the robot to navigate over the surface, and one or more detectors adapted to detect the presence of the material on the surface and provide signals indicative thereof. The navigation sensors may include one or more collision sensors and/or proximity sensors. The collision sensors may include one or more lateral displacement sensors arranged on a peripheral sensor ring to provide ~~360E~~ 360° collision detection, and/or one or more vertical displacement sensors.

Before the paragraph beginning on page 6, line 21, please insert the following header,

B6 -Brief Description of the Drawings-.

Before the paragraph beginning on page 6, line 29, please insert the following header,

B7 -Detailed Description of the Exemplary Embodiments-.

Please replace the paragraph beginning on page 6, line 29, with the following amended paragraph:

As can be seen from Figure 1, the robot of the present example is substantially circular in overall plan view. A simple plate-like chassis 1 supports both the mechanical and electrical components of the robot. The plate-like chassis 1 supports the body ~~2~~ (not shown) of the robot on resilient rubber mountings 3 which allow the body to move relative to the chassis 1 when a force is applied, ~~eg~~ e.g. by collision with an object, to a sensor ring 20 which is disposed around the periphery of the body. Four displacement sensors 4 placed at ~~90E~~ 90° intervals around the robot measure lateral displacement of the body ~~2~~ relative to the chassis 1 and inform the control system of contact with an external object. The displacement sensors 4 are based on linear Hall Effect devices which produce a voltage which is proportional to the strength of the magnetic field in which they are immersed. Each sensor consists of a small permanent magnet mounted on the body shell support ring 20 and a Hall Effect device mounted on the main chassis 1. When the body moves with respect to the chassis 1 (as happens during a collision) the voltage produced by the Hall Effect device varies and can be used to signal the control system that an object has been encountered. By examining the signals from all four sensors the angle and magnitude of the collision can be deduced. These sensors allow displacements in the order of 0.1 mm to be reliably detected. A fifth sensor 18, of the same type as the displacement sensors 4, measures vertical displacement of the body shell to accommodate forces produced by objects which are of insufficient height to cause lateral body movement. In an alternative construction, these sensors may be superseded by a single custom-built sensor which can measure lateral and vertical displacement simultaneously. Such an integrated sensor may be optical in nature

~~utilising~~ utilizing an array of photo detectors mounted on the chassis and a light source which is mounted on the body support ring.

Please replace the paragraphs beginning on page 8, line 18, with the following amended paragraphs:

Power for the robot, including the motors 6, 7 and the control system is provided by means of a battery pack 11 mounted on the chassis 1. To protect the components of the robot from tampering and from damage a cover or housing (not shown) is attached to the body ~~2~~ to house the robot components. In the preferred embodiment, this is part-spherical or dome-like in shape.

A row of spray nozzles 16 and a pump 115 (not shown in Figure 1) provide a means of dispensing treating fluid on to the surface to be treated and detectors 14,15,17 are provided to detect the presence of the treating fluid (or a suitable additional marker fluid). The three sensor units 14, 15, 17, one placed in front of each of the drive wheels and the third 17 placed centrally, emit light at a wavelength which excites a fluorescent dye in the product being detected. These sensor units incorporate a pair of light sensitive devices positioned at ~~90E~~ 90° to the robot's direction of travel and spaced 20mm apart, which can detect light produced by the fluorescent dye. By examining the intensity of the light detected by these devices the edge of a section of previously deposited product can be detected and hence followed. In an alternative construction, the three sensor units 14, 15, 17 pass a small electrical current through the floor covering by virtue of an array of stainless steel contacts which are designed to glide over the floor covering surface. The conductivity of the floor covering will vary depending upon whether or not it has recently been sprayed with product. By examining the

B8 conductivity of the floor covering, the edge of previously deposited product can be detected and hence followed.

Please replace the paragraph beginning on page 11, lines 16-17, with the following amended paragraph:

B9 The functions of the Low level behaviour modules 101-105 and 114 are now described in detail:-

Please replace the paragraph beginning on page 17, line 11, with the following amended paragraph:

B10 The ultrasound sensor unit 5 has a pre-processor which manages the sensor 13, providing timing pulses etc., and provides the high level behaviour with continuous 'range to target' data and a simple range warning to the reduce speed behaviour module 103. The continuous output is used by the stuck behaviour module 107 which rotates the robot through ~~360E~~ 360° whilst looking for a clear path down which the robot can escape and is also used by the room size and clutter estimation behaviour modules 109, 108.

Amendments to the Drawings:

The attached Replacement Sheets (2) include changes to FIGS. 1 and 2, as indicated in red on the attached Annotated Sheets Showing Changes (2).

Attachments: Replacement Sheets (2)
Annotated Sheets Showing Changes (2)